

An imaging apparatus for the three dimensional imaging and/or measurement of a surface includes first beam modifying means (9) for modifying an incident beam (2) of short coherence length light to form a modified beam (10) of first (5) and second (6) components having a mutual path difference and being capable of producing a detectable interference. Beamsplitting means (13) splits the modified beam into first (15) and second (14) beams. Second beam modifying means (18) is provided for modifying the properties of at least one of the first and second beams, recombining means (19) thereafter recombining the first and second beams. The apparatus further includes means (22,24) for directing the recombined first and second beams towards the surface and scanning them across the surface, and means (28, 32, 33, 36) for monitoring the first and second beams after reflection and detecting interference of the reflected first and second beams. A corresponding method is also disclosed.